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Facilitating Social-Ecological Transformation of a Vacant Lot on an Urban Campus: the Houston-Congolese Connection

The importance of urban universities in civic ecology education and the transformation of urban spaces and mindsets has been little explored. With as many as 1475 colleges, universities, and community colleges in large cities around the United States, many of which possess significant land holdings, it is conceivable that these institutions could make a significant contribution to the "greening" of cities. This paper posits that urban universities, especially those with environmental science and studies or sustainability-related programs, can be a locus for civic ecology education and can contribute, not only to the transformation of urban landscapes but also to the training of future environmental leaders, and ultimately to the transformation of urban young people. The paper describes an urban gardening project undertaken at University of St. Thomas in Houston as an example of this kind of social-ecological transformation and as a potential model for other urban universities.

Keywords

urban gardening, urban universities, civic ecology, social-ecological resilience, environmental leadership

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INTRODUCTION

The United States is a highly urbanized country. According to the 2010 census, 81% of the U.S. population lives in urban areas (in comparison with 54% of the world's population), and projections are that this trend will only increase in coming decades (U.S. Census Bureau 2010). With more people moving to cities, questions of urban land use and transformation are becoming increasingly pressing. In fact, according to the United Nations (2014), managing urban areas is considered to be one of the most serious development issues for the 21st century. These development challenges are complex in that they are socio-ecological and involve interactions between human and natural communities. Further, studies have shown that the process of global urbanization is widening the gap between humans and nature, resulting in knowledge gaps, attitudes of indifference, and increasing estrangement of urban dwellers from the natural world (Kahn and Friedman 1995; Kahn 2002; Turner et al. 2004; Miller 2005). This produces concomitant adverse effects on conservation efforts. Hence, research efforts in urban environmentalism over the past several decades have focused, not only on designing sustainable buildings and landscapes as a way of “naturalizing” cities, but also on engaging local communities in these efforts if they are to be sustainable and effective in rebuilding the resilience of urban social-ecological systems (Krasny et al. 2014; Russ et al. 2015).

The field of “civic ecology” has grown out of efforts to link the transformation of urban space with community based greening initiatives and innovations (Francis et al. 1984; Poole 1998; Smith 2008; Svendsen and Campbell 2008; Fisher et al. 2012; Krasny and Tidball 2012; Bendt et al. 2013). Civic ecology is defined as “local environmental stewardship actions taken to enhance the green infrastructure and community well-being of urban and other human-dominated systems” (Krasny et al. 2014). It includes practices such as community gardening, tree planting, watershed or habitat restoration and other kinds of community-based “urban innovations to sustain ecosystem services” (Austin and Kaplan 2003; Krasny and Tidball 2009a; Barthel et al. 2010; Krasny et al. 2014). When urban dwellers participate in civic ecology projects, they are reconnected with nature and may experience the physical, psychological and spiritual benefits provided by hands-on contact with the natural world. This sense of “biophilia” (Kellert and Wilson 1993), along with an increase in their knowledge of nature through co-adaptive learning, may encourage them to become more engaged in, and supportive of, urban conservation efforts, which in turn may function to build the resilience of the city in which they live so that it can better cope with disturbances and other urban challenges.

The importance of “civic ecology education” as a form of urban environmental education has been discussed in the literature, as has the role of urban environmental stewardship in increasing the resilience of urban neighborhoods and communities, though more data is needed (Krasny and Tidball 2009b; Tidball and Krasny 2007, 2010; Kudryavtsev et al. 2012; Romolini et al. 2012; Okvat and Zautra 2014). And while universities are beginning to reflect on their role in helping cities meet the challenges of urbanization (OECD 2009; Perry and May 2011; Jones 2013; Leopold 2013), one aspect that needs to be explored further is the role of urban universities in civic ecology education and the transformation of urban spaces and mindsets. With as many as 1475 colleges, universities, and community colleges in large cities around the United States, many of which possess significant land holdings, it is conceivable that these institutions could make a meaningful contribution to the “greening” of cities. This is not to say

that these campuses lack campus gardening or other sustainability efforts, and indeed certain universities who conceive of their campuses as living laboratories, such as Portland State University, Florida A&M, Oberlin College and the University of Maryland, have achieved significant success in this regard. But in developing such programs, the degree and strength of human engagement and biophilia are critical factors for achieving social-ecological resilience, and the human transformations that occur are central to project success. This paper posits that urban universities, especially those with environmental science and studies or sustainability-related programs, can be a locus for civic ecology education and can contribute, not only to the transformation of urban landscapes and communities, but also to the training of future environmental leaders and ultimately to the transformation of urban young people. In this way, urban universities can become facilitators of social and environmental change and can help build the social-ecological resilience of the urban communities in which they reside.

The paper describes an experiment in campus greening at University of St. Thomas (UST), a small Catholic liberal arts college in Houston, TX. In 2010, the UST Environmental Science and Studies (ESS) Department identified an opportunity to “green” the campus by constructing an urban garden on a vacant lot at the edge of campus. Since then, the garden has expanded through innovations introduced by alumni, in collaboration with the ESS Department, which have precipitated the social-ecological transformation of the vacant lot from unused land to a community and educational resource. This paper presents these innovations as a model for urban gardening and civic ecology that may be transferable to other universities or urban settings. The paper will draw upon conceptual models for civic ecology education and practice developed by Krasny and Tidball (2010, 2012). The paper will also propose that civic ecology practices such as these are consistent with the mission of a Christian, liberal arts university and further, that civic ecology practices and liberal arts education can be mutually enriching. Ultimately the goal is that practices such as community gardening improve the quality and resilience of higher education, facilitate social and environmental change in urban neighborhoods, and help transform students into more engaged social-ecological stewards.

SEEDS OF AN IDEA

The University of St. Thomas is an urban university located in heart of Houston, with a total enrollment of 3522 students, including 1645 undergraduates and 1877 graduates. It is centrally located in the Montrose neighborhood in Neartown Houston, adjacent to the Museum District, the Texas Medical Center complex, and downtown. The neighborhood surrounding the university is primarily residential/commercial land use and is middle to upper middle class, with a median household income of approximate \$67,500, higher than the Houston median of approximately \$45,000 (Income by Zip Code 2013). Median age of the Montrose neighborhood is thirty five years old and the population is approximately 23,000, of which 69% are Caucasian, 15% Hispanic, 5% Asian, 4% black and 7% are other races or a mix of races (Zip Code Population and Races 2010). Students from the university come from backgrounds different from those of the residents in the neighborhoods immediately surrounding the campus. While the neighborhood is primarily Caucasian, the university is relatively more Hispanic and diverse in its populace. As an Hispanic-serving institution (HSI), 42% of the undergraduates are Hispanic, with the remainder being 36% Caucasian, 14% Asian and 8% black. Eighty seven percent of UST students are Texas residents, primarily from urban neighborhoods in the greater Houston

area, ten percent are international students and three percent are from out of state. More than 60% of students commute to campus and the remainder resides on campus or in apartments in the neighborhood. Of the total enrollment, approximately 60% of the students identify as Catholic, 20% Protestant, 6% Muslim and the rest are of other or no religious persuasion (UST 2014-2015 Fact Book).

The campus is 21 acres in size and the university offers 31 undergraduate and 11 graduate degrees. One of the undergraduate departments is the Department of Environmental Science and Studies, which offers undergraduate degrees in both Environmental Science (B.S.) and Environmental Studies (B.A.). Both degrees require that students take a foundational course in Sustainability which is entitled “Authentic Development and Sustainability.” In this one-semester course students are introduced to the fundamentals of sustainability and are required to propose and complete a group project. The course is also open to students in other departments and schools on campus. It is a survey course focusing on three main areas of sustainability: energy, buildings, and food.

The seeds of the community garden project were planted in the spring of 2010 when students and faculty initiated a discussion with the ESS Department about their interest in having a vegetable garden on campus. It was suggested that this be the project for the Authentic Development and Sustainability class in the fall. Although none of the students in the class had experience with gardening, they had a desire to learn and were favorable to the idea of founding a green space on campus dedicated to growing food and to enhancing campus biodiversity through native plantings.

The first step was to determine if land was available on campus. The administration offered an empty one-half acre lot on the northwest corner of campus where a building recently had been demolished. Concurrently, discussions were initiated with a citywide organization called Urban Harvest, which is considered to be the fourth largest community gardening program in North America (<http://www.urbanharvest.org>). Urban Harvest agreed to offer one of their fall courses in a classroom on campus so the students could participate. In October the students received 6 hours of hands-on instruction by Urban Harvest (in two three-hour sessions) on how to start an urban garden in Houston, as well as instructional visits to two urban gardens in the city. With the UST professor they studied the principles of food sustainability and discussed essays by Wendell Berry in particular. The combination of the hands-on instruction by Urban Harvest and the academic instruction by the UST professor was important to the structure of the course and the ultimate success of the project.

The class worked together as a group to develop the garden rationale and design, to construct the garden, and to plant and care for a fall crop. The students were responsible for preparing a Garden Manual, which documented the process. Each student had responsibility for particular aspects of the garden design and implementation as well as for preparing a section of the Garden Manual.

As a class they formulated the following objectives for the project:

1. To plan, construct, plant and maintain a community vegetable garden.
2. To build community on campus – create friendships and work together on a common project.

3. To become aware of the importance of where our food comes from.
4. To promote a sustainability mentality on campus.
5. To strengthen personal bonds with the natural world.

Due to the dense “gumbo” soils in Houston and the amount of debris buried in the urban lots, it was necessary to construct raised beds. Using the principles of square foot gardening, the students developed a simple, sturdy design for the beds and drew up plans for fourteen plots, four of which were 12 ft. by 4 ft. in size and eight of which were 4 ft. by 4 ft. They publicized the new garden to the university community, and each plot was claimed by a department, an individual faculty member, or a student club. Two plots were reserved for native landscaping. The students arranged for the lumber and soil to be delivered and worked together with the professor and Urban Harvest teacher to construct the beds one Saturday morning in October. The following week during class they planted native perennials and herbs in the native landscaping plots. After the initial construction, each department, club, or individual was responsible for planting and caring for their assigned plots. With individual contributions from each student, the class developed the garden manual, incorporating both theoretical and practical principles along with a “sustainability evaluation” for the project. Costs were covered with a donation by a local alumnus of UST; in addition, the students negotiated discounts on supplies.

THE IDEA SPROUTS AND GROWS

The community garden is located across the street from the university dormitory, and almost immediately, interested students began to visit. Some of them offered to assist in the planting or watering tasks; others simply met there to study or sit quietly. The following spring, in April 2011, the first National University and College Community Garden Summit was held at the University of Houston, and UST presented their garden project at one of the breakout sessions. Also in that month, the ESS Department was approached by a local high school student who asked if he could do his Eagle Scout project at the garden. He proposed the construction of a small meditation area with benches, a planting box, an entranceway arbor, and a large mounted cross. The project was completed in the summer of 2011, and the Boy Scout was awarded his Eagle Scout badge. In October 2011, the garden was officially blessed by the University chaplain and the blessing, followed by a cook-out in the garden, was attended by UST administration, faculty, students, and staff as well as some families from the neighborhood.

Throughout the 2011-2012 academic year, those groups that had taken charge of different plots experimented with planting and caring for their plots, with varying degrees of success. In March of 2012, UST held an “Environmental Week” in which one of the featured activities was a local, homegrown dinner held outdoors at the site of the community vegetable garden. The event was a collaborative effort between the Departments of Environmental Science and Studies and Political Science in the School of Arts and Sciences, along with the School of Education. Environmental Science and Political Science students made “stone soup” from the garden produce and served this along with grass fed beef from a local rancher, and a professor and students from the School of Education contributed with a Gulf shrimp boil. The event brought 50 people from the University to the garden for an outdoor dinner at which ESS and Political Science students made short presentations for the guests on various aspects of sustainability.

The timeline below in Figure 1 summarizes key steps in the initial phases of the project.

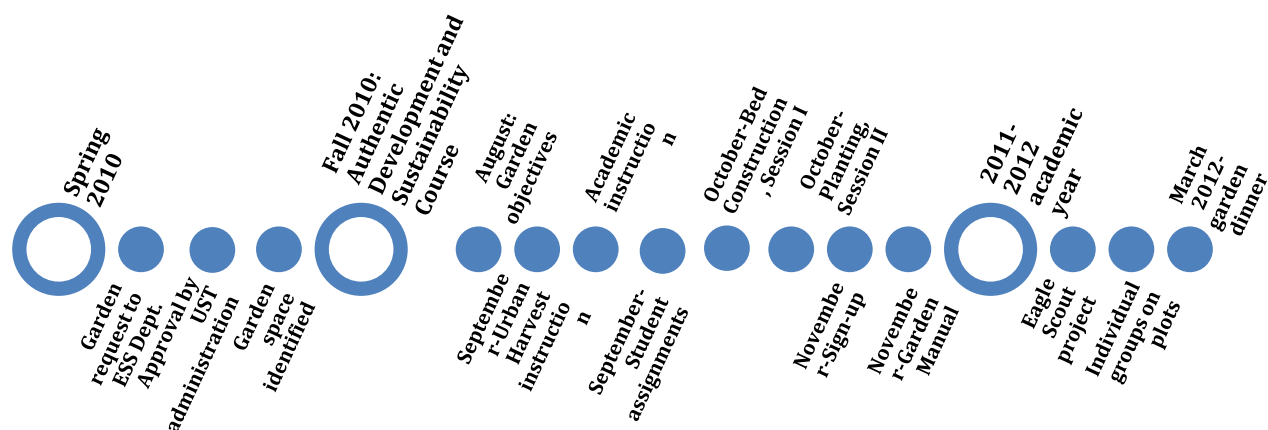


Figure 1. Timeline of community garden project from Spring 2010 to Spring 2012.

In June of 2012, a high school student interested in working on her Gold Award for the Girl Scouts approached the ESS Department about the possibility of a project at the Community garden. At first the idea of establishing a “patch” of native prairie was considered; this was changed to the construction of compost bins when in July the ESS Department was approached by an alumnus of UST who proposed an innovative urban gardening collaboration called Plant It Forward Farms (PIFF). PIFF was conceived as a way to help economically disadvantaged Congolese refugees get a foothold in this country and generate a living wage for themselves (www.plant-it-forward.org/). Since 2000, over 11,000 Congolese refugees have been resettled in the United States, and Houston has been the largest single receiving city for them (COR 2013). Some of the refugees come from agrarian backgrounds and are in need of work when they arrive. Plant It Forward Farms proposed to train refugees how to garden in Houston and to then place them on urban garden plots as a way of supporting themselves. At the same time, some parts of Houston lack fresh, locally grown food. Plant It Forward gardens seek to satisfy both needs – to provide gainful employment for the refugees while making locally grown food more accessible in Houston.

Upon consultation, the University decided to move forward with the PIFF proposal. The administration’s acceptance was due in large part to a trust relationship with the Department of Environmental Science and Studies, which had developed as a result of a history of successful campus projects undertaken by the Department. In addition, the university places strong emphasis on the value of service opportunities and hands-on learning for students. Finally, the fact that an alumna initiated the project was also attractive. A simple lease was arranged by the University’s legal counsel, the arrangement being that PIFF could lease the land for \$1 per year until such time as the university might need to develop the lot.

By the spring of 2013, additional garden beds had been completed and compost bins were constructed by the Girl Scout for her Gold Award. The meditation area previously made by the Boy Scout was kept intact, though it was moved to accommodate the additional planting beds. A diagram of the completed garden is shown below in Figure 2.

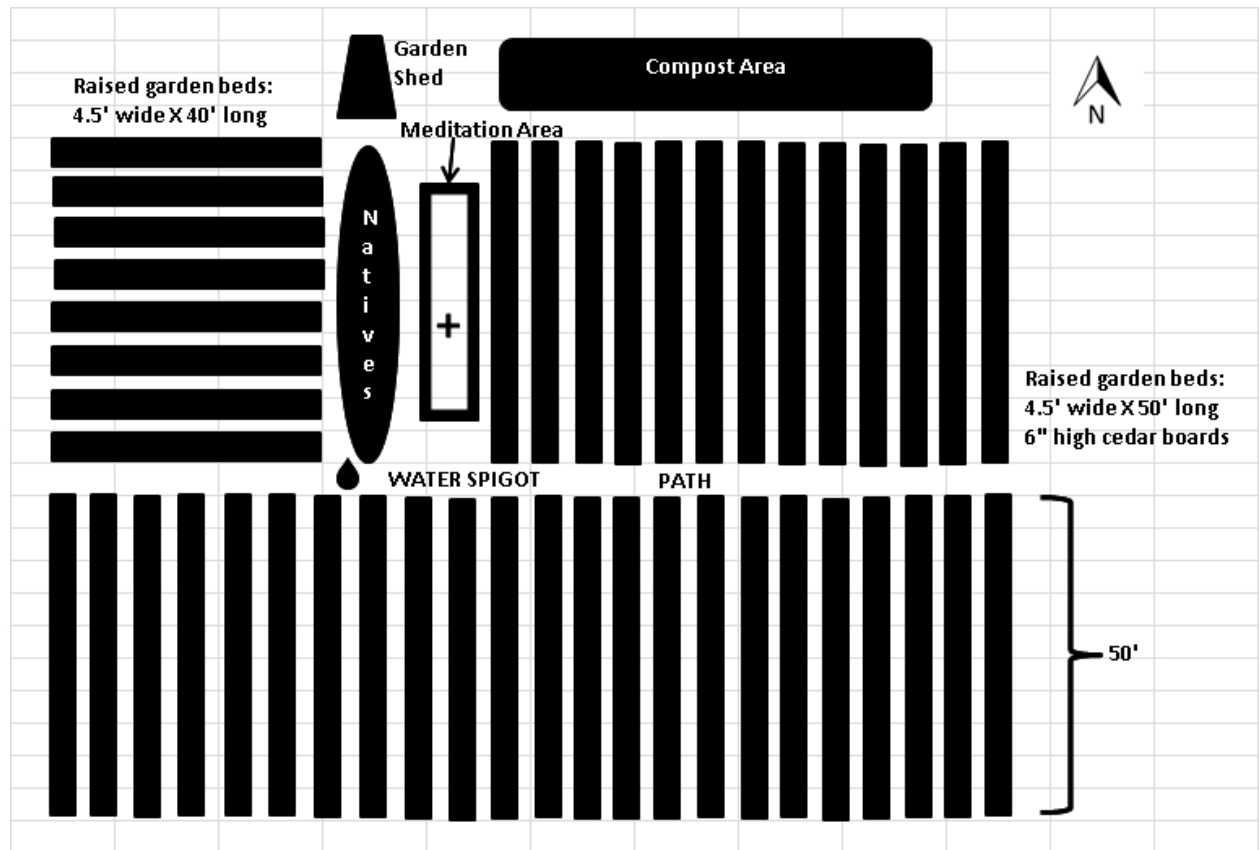


Figure 2. Garden diagram, Spring 2013.

That spring a Congolese farmer who had received the PIFF training was assigned to the site. The first crop was planted in April 2013 and harvested in summer 2013. Since then, fall, spring, and summer crops have been planted and harvested. The entire $\frac{1}{2}$ acre lot has been used for food production in raised beds except for some border areas of native flower gardens. Since the spring of 2014, produce has been sold in a small farmer's market on campus as well as in farmers' markets around the city, and a CSA (Community Supported Agriculture) has been established. The farmer, Roy Nlemba, reports that he loves Houston and that this job is a job of "his heart;" "the reason I'm staying dirty" is that "this dirt is going to give me something in the future" (www.plant-it-forward.org). Indeed it has: The proceeds of the garden have been sufficient to sustain him and his family with a living wage, with the CSA being the primary source of income.

UST students have also participated by volunteering for service hours at the garden. Roy has done an excellent job of supervising them and teaching them the basic skills needed. At the request of students, several food or gardening-related courses have been offered at the University

over the past two years. These and other developments in relation to the university's involvement will be commented upon in greater detail in the following section. A timeline outlining the progress of the project since the inception of the PIFF collaboration is shown below in Figure 3.

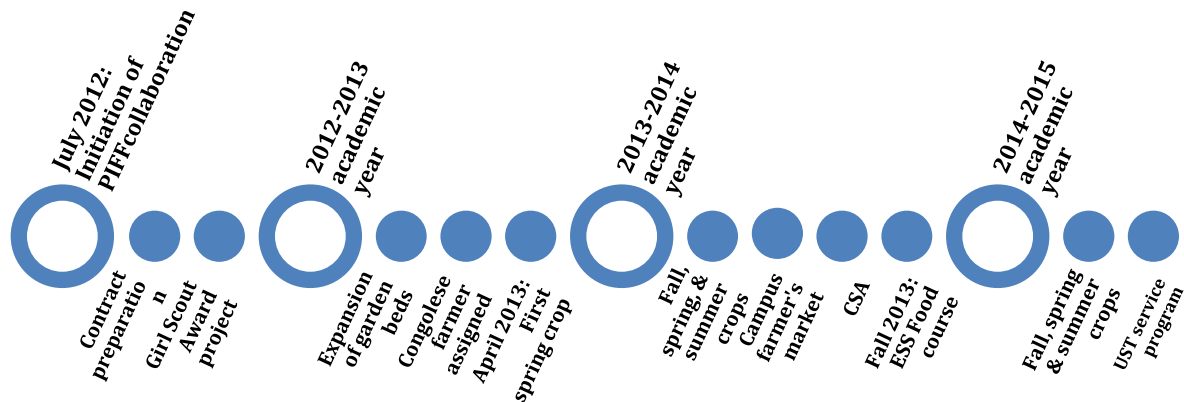


Figure 3. Timeline of community garden project since PIFF collaboration in July 2012.

APPLYING THE CONCEPTUAL MODEL

The conceptual model developed by Krasny and Tidball (2012), shown below in Figure 4, is helpful for better understanding the value institutions of higher learning can bring to civic ecology practice. It applies well to the urban gardening experience recounted in this article, with some modifications that could be suggested specific to the role of universities in civic ecology education and as facilitators of social and environmental change.

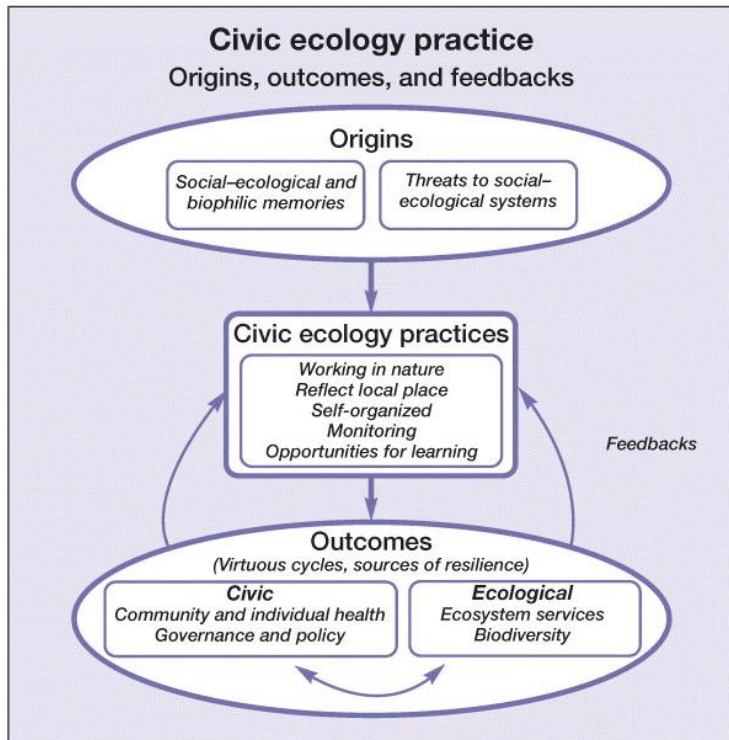


Figure 4. Basic conceptual model for civic ecology practice (Krasny & Tidball 2012).

In relation to Origins, Krasny and Tidball indicate that civic ecology projects are initiated in response to threats to social-ecological systems, such as natural disasters, and they draw upon social-ecological and biophilic memories such as cultural practices or local knowledge (Barthel et al. 2010). In the case described here, the innovation for the urban gardening program was driven by what could be called “social-ecological entrepreneurial philanthropy” (Figure 5). The alumnus was driven to “give back” to the community by doing something more than just giving a donation to a charitable organization; instead, she pursued an entrepreneurial idea (Plant It Forward Farms), which she hoped would be both socially and ecologically sustainable. This philanthropic endeavor assisted Congolese refugees who come from agrarian backgrounds in their home country, and at the same time sought to respond to the need for more locally grown food in Houston. Another issue in Houston is the high rate of obesity, particularly prevalent among youth and college-age students; this could perhaps be mitigated by healthier eating and by the opportunities for exercise provided by urban farming. In addition, the lack of knowledge of how to grow food, as well as the lack of exposure to nature – and hence the loss of biophilic memories – among urban youth, are serious contemporary maladies which such social-ecological entrepreneurial philanthropy, especially when practiced in a university setting, can hope to ameliorate.

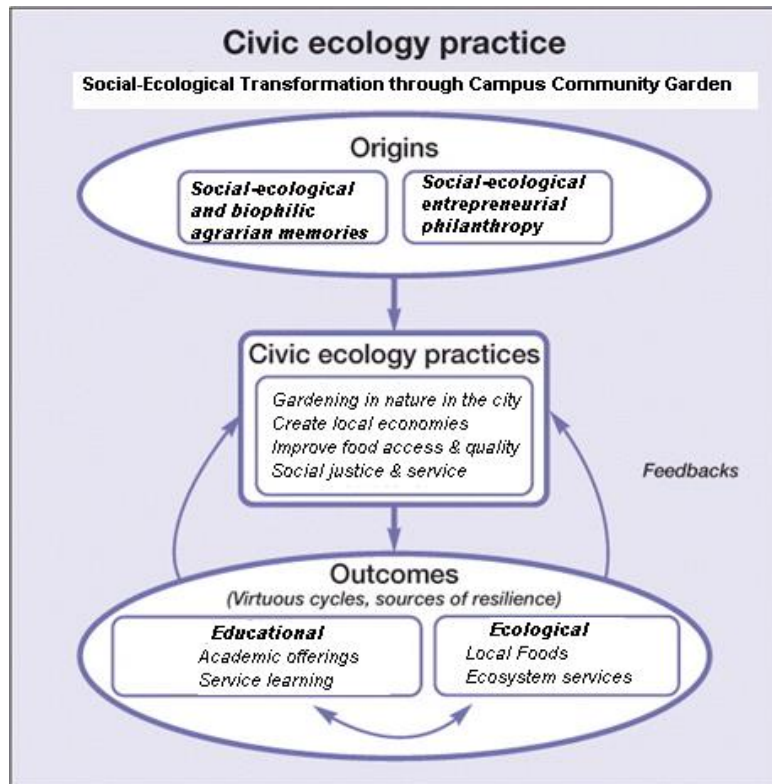


Figure 5. Working adaptations to civic ecology model of Krasny and Tidball (2012).

The civic ecology practiced as part of this philanthropic and entrepreneurial endeavor involves engaging with nature by learning to grow food in the city, improving access to healthy food, creating local economies and engagement through the farmer's market and CSA, and fostering opportunities for service learning and social justice (Figure 5). Adaptive learning is occurring not only in the refugee community, but also in the university community, especially as academic and service learning programs grow. In addition, a number of faculty and staff buy produce from the community garden and several have joined the CSA. Increased engagement is also manifest in the neighborhood, as neighbors come by to volunteer, purchase food from the garden, or simply to spend time meditating in a quiet natural place. These outcomes are reflected in Figure 5.

The educational outcomes in Figure 5 can be grouped into two main categories: (1) the creation of academic course offerings and (2) service learning. In the university community, the educational benefits to date include:

- New course on "The Science and Sustainability of Food," offered in Fall 2013 at student request. The students read works by Wendell Berry, E.F. Schumacher, and Michael Pollan, as well as readings related to social and environmental justice.
- Theology of Creation class, offered Fall 2015. This class encourages reflections on the human person as gardener as well as service opportunities at the garden.

- Approximately 90 hours of service by 20 students from introductory earth science classes, Spring 2013 and Fall 2014. This satisfied both a service learning and a writing requirement, as the students were asked to write reflections on their experiences at the garden.
- Approximately 150 hours of service by 50 students from the Freshman Symposium class, Fall 2014 and 2015.
- Approximately 100 hours of service by 10 biology majors, Spring 2015, to satisfy a service learning requirement for introductory biology course.

These educational outcomes are building student engagement with the project, with gardening and food issues in general, and with the refugee community in Houston. They are encouraging “virtuous cycles of greening and community well-being,” as Krasny and Tidball call them (2012), as more students become interested in food and gardening and in issues of social and environmental justice. Positive feedback cycles are being generated and “success is breeding success” as linkages across the university and with the local neighborhood are strengthened.

One of the civic ecology principles Krasny and Tidball identify is that sustainable civic ecology practices “expand from small-scale, self-organized efforts to encompass multiple partnerships” (Krasny & Tidball 2012). An example of this is that recently Urban Harvest asked to host their courses on the UST campus, in part to avail themselves of the PIFF garden as a field site, and in part to make their courses available to university students. Another emerging partnership is with Catholic Charities, as a UST alumnus who now works in refugee resettlement desires to collaborate with the University’s community garden effort. In addition, the University recently signed the “St. Francis Pledge to Care for Creation and the Poor” as an extension of its commitment to sustainability, which began with the community garden. UST also created a sustainability committee in 2014 that has drafted a policy and is developing other sustainability projects on campus.

These outcomes and civic partnerships illustrate how the garden as a civic ecology practice is gradually becoming part of the fabric of the university. It is engaging students, faculty, and staff as well as the local neighborhood, gardening organizations and social service organizations in Houston. It is exposing more students each semester to the practice of gardening and increasing their knowledge of the practical, philosophical, and social justice issues related to food and urban gardening. Slowly it is beginning to influence the culture of the University toward a more sustainable mindset.

The garden has also had ecological and aesthetic benefits. Many on campus and in the neighborhood have commented on the beauty of the garden, the lushness of the vegetation, the prolific vegetable growth, and the biodiversity benefits of the native landscaping. What was a vacant lot has been transformed into a fertile landscape. The engagement of the students with nature has increased as they have participated in the various academic and service learning initiatives described above. As students become more empowered in their knowledge and practice of urban gardening, more work is needed to monitor the changes in the nature and degree of their natural area stewardship and to more consciously include this component in campus sustainability efforts (Krasny & Delia 2014), and the university intends to do this in the coming years.

CONCERNS REGARDING LAND TENURE

As has been indicated, this project has been successful in transforming a vacant urban lot on the university campus into an alive and biodiverse place. If other urban universities wish to follow this model, will they be able to find the space? Having the plot on campus has made it very accessible to the students and others in the surrounding neighborhood in a way that an off-campus plot would not be. However, the question of land tenure is a pressing one. Should the university desire to develop this lot, the garden would have to be moved to another lot on campus or a location off-campus. In an effort to address this concern, the raised beds were constructed in such a way that they can be easily disassembled and reassembled should the plots have to be moved. One further action that could be taken is to use the success of the current gardening project to convince the university's strategic planning committee to incorporate a parcel of land for a community vegetable garden in the university's strategic plan.

CONCLUSIONS

Civic Ecology Practices and the Liberal Arts

While the UST Community garden has been an effective experiment in urban greening, an additional benefit that has emerged is its compatibility with liberal arts education. The new courses that have been offered have naturally had a social-ecological bent and have been interdisciplinary in their approach and content. They have addressed basic ecological concepts related to biodiversity, plant growth, native landscaping, and composting. They have also involved reading rural literature and discussing issues related to food and the urban landscape. Finally, they have addressed issues of social justice and authentic development, including the plight of refugees and the poor. These diverse yet very relevant and important subject areas are naturally covered in an interdisciplinary course surrounding urban food and gardening.

Through the service learning component, the students have gained hands-on field experience with gardening and have also engaged with the Congolese farmer and his family. They have had the opportunity, all too rare in their urban lives, to connect with the natural world. In fact, many of the students commented in their reflections on how meaningful it was for them to “get their hands in the soil” and to experience nature through their gardening experiences. For most of them, it was the first time they have ever experienced anything like this. Some commented that they were at first afraid because they are not used to being outdoors, to being exposed to bugs and other “outdoor critters,” or to getting dirty. It may be that the opportunity to be exposed to the natural world in a positive setting is one of the most important advantages for the education and development of urban youth that civic ecology practices such as this provide.

Civic Ecology Practices and Faith-Based Education

As a Catholic, liberal arts university, the University of St. Thomas also has a mission to faith-based education. The community garden project has been beneficial in this regard and is clearly consistent with the mission of the university. Further, it can help incarnate the mandate to stewardship recently articulated in Pope Francis' encyclical, *Laudato Si*, and is a good example

of “integral ecology” (natural + human ecology; cf. Chapter 4 of *Laudato Si*). This kind of urban gardening, especially as developed through the Plant It Forward program, is one way of putting the Gospel into practice and living the teachings of the faith. It involves caring for the poor and the marginalized, accepting others from different cultural backgrounds and learning to work together as a community, and coming to a greater appreciation of the Creator through the created world. Reverence for food and sharing food with others also has strong foundations in the faith. This civic ecology project is proving to be an excellent avenue for teaching youth about social and environmental justice and the importance of loving one’s neighbor. Urban gardening can also be an exemplar of “reconciliation ecology” (Rosenzweig 2003) – healing the land by increasing biodiversity and resilience in human-dominated ecosystems. On the human side, urban gardening can facilitate healing and reconciliation for individuals, families and communities as a result of fostering contact with the natural world.

The Plant It Forward urban farm at University of St. Thomas in Houston is an innovative urban gardening civic education model that could be transferrable to other universities, especially those in urban areas. A course syllabus can be made available for interested universities who wish to pursue such a project. Such a model could help bring about the transformation needed to form urban college students into more engaged environmental stewards. It could also help urban universities become facilitators of social and environmental change, at least at the neighborhood scale. In the long run, one hopes that civic ecology practices such as this will help build the resilience of urban landscapes and communities and make them more humane and loving places in which to live.

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